

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 10 of 17

Remarks

Claims 47-81 are pending in the application. Claims 47-66 were allowed. Claims 67-81 were rejected. Claims 1-46 and 82-84 were previously canceled. Claims 67-81 are amended. Claims 47 and 67 are the independent claims. Reconsideration of the amended application is respectfully requested.

The examiner rejected claims 67-81 under 35 USC §112 as being indefinite. In particular, the examiner stated that the recited feature of swelling the membrane "by addition of only at least one of water and a buffer solution" is unclear. This language recites a membrane that is swelled from a dried-up state, by the addition of one or more substances, which are limited to water, a buffer solution, or both. It is respectfully submitted that the claim language was definite as presented. However, the claim language has been amended to recite the addition of only one or more fluids selected from the group consisting of water and a buffer solution. The rejection, therefore, should be withdrawn.

Claim 69 is amended to recite the addition of amphiphilic macromolecules to the lipids as a separate method action, rendering the claim definite. The rejection of claim 69 should be withdrawn as well.

The examiner rejected claims 67, 69-72, 75-78, 80, and 81 as being anticipated by Groves et al.

Independent claim 67 recites a method of providing a microchannel electrophoresis chamber. According to the claimed method, at least one channel having a bottom surface including a substrate-supported membrane is provided. The substrate-

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 11 of 17

supported membrane includes a substrate and a dried-up fluid lipid membrane. The dried-up fluid lipid membrane is composed of only lipids. The dried-up fluid lipid membrane is reconstituted by swelling lipids in the membrane by the addition of only one or more fluids selected from the group consisting of water and a buffer solution, that is, by the addition of only water, only a buffer solution, or only water and a buffer solution.

In contrast, Groves et al. disclose a microchannel electrophoresis chamber that does not include a dried membrane, or a membrane that had been dried, as previously acknowledged by the examiner. See, for example, the examiner's action dated September 19, 2005, on page 4. It is submitted that Groves et al. do not disclose or suggest this feature of the invention recited in claim 67. Claims 69-72, 75-78, 80, and 81 depend from claim 67, and therefore also are not anticipated by Groves et al. The rejection of claims 67, 69-72, 75-78, 80, and 81, therefore, should be withdrawn.

The examiner previously combined the teachings of Groves et al. with those of Goodrich et al. in rejecting a previous version of claim 67. Goodrich et al. disclose a method of freeze-drying lipid membranes for storage and later use. However, Goodrich et al. require that additional agents be applied to the lipids for freeze-drying and storage. For example, a buffer that must include at least one membrane-permeant cryoprotectant is added in Example 1; and in Example 2, different monosaccharides/disaccharides/polymers are added. Goodrich et al. do not disclose or suggest in any of the examples or anywhere else in the reference that a substrate-supported membrane could exist as lipids only in a dried-up state, to be swelled by only water or a buffer solution, as recited in claim 67. Goodrich et al. only disclose lipids that

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 12 of 17

are freeze-dried with buffers and additional agents, and state that such additives must be added, teaching away from the claimed invention.

For at least the reasons stated above, it is submitted that no combination of the teachings of Groves et al. and Goodrich et al. could render obvious the invention recited in claim 67. Claims 69-72, 75-78, 80, and 81 depend from claim 67, and therefore also are not rendered obvious by this combination.

The examiner rejected claims 67, 69, 70, and 72-80 as being anticipated by Boxer et al.

Independent claim 67 recites a method of providing a microchannel electrophoresis chamber. According to the claimed method, at least one channel having a bottom surface including a substrate-supported membrane is provided. The substrate-supported membrane includes a substrate and a dried-up fluid lipid membrane. The dried-up fluid lipid membrane is composed of only dried-up lipids. The dried-up fluid lipid membrane is reconstituted by swelling lipids in the membrane by the addition of only one or more fluids selected from the group consisting of water and a buffer solution, that is, by the addition of only water, only a buffer solution, or only water and a buffer solution.

In contrast, Boxer et al. disclose lipid bilayer membranes that do not include a dried membrane, or a membrane that had been dried, as previously acknowledged by the examiner. See, for example, the examiner's action dated September 19, 2005, on page 5. It is submitted that Boxer et al. do not disclose or suggest this feature of the invention recited in claim 67. Claims 69, 70, and 72-80 depend from claim 67, and therefore also

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 13 of 17

are not anticipated by Boxer et al. The rejection of claims 67, 69, 70, and 72-80, therefore, should be withdrawn.

The examiner previously combined the teachings of Boxer et al. with those of Goodrich et al. in rejecting a previous version of claim 67. Goodrich et al. disclose a method of freeze-drying lipid membranes for storage and later use. However, Goodrich et al. require that additional agents be applied to the lipids for freeze-drying and storage. For example, a buffer that must include at least one membrane-permeant cryoprotectant is added in Example 1; and in Example 2, different monosaccharides/disaccharides/polymers are added. Goodrich et al. do not disclose or suggest in any of the examples or anywhere else in the reference that a substrate-supported membrane could exist as lipids only in a dried-up state, to be swelled by only water or a buffer solution, as recited in claim 67. Goodrich et al. only disclose lipids that are freeze-dried with buffers and additional agents, and state that such additives must be added, teaching away from the claimed invention.

For at least the reasons stated above, it is submitted that no combination of the teachings of Boxer et al. and Goodrich et al. could render obvious the invention recited in claim 67. Claims 69, 70, and 72-80 depend from claim 67, and therefore also are not rendered obvious by this combination.

The examiner rejected claim 68 as being unpatentable over Groves et al., in view of Bailey et al.

Claim 68 depends from claim 67. Independent claim 67 recites a method of providing a microchannel electrophoresis chamber. According to the claimed method, at

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 14 of 17

least one channel having a bottom surface including a substrate-supported membrane is provided. The substrate-supported membrane includes a substrate and a dried-up fluid lipid membrane. The dried-up fluid lipid membrane is composed of only dried-up lipids. The dried-up fluid lipid membrane is reconstituted by swelling lipids in the membrane by the addition of only one or more fluids selected from the group consisting of water and a buffer solution, that is, by the addition of only water, only a buffer solution, or only water and a buffer solution.

In contrast, Groves et al. disclose a microchannel electrophoresis chamber that does not include a dried membrane, or a membrane that had been dried, as previously acknowledged by the examiner. See, for example, the examiner's action dated September 19, 2005, on page 4. Bailey et al. do not overcome the noted deficiencies of the teachings of Groves et al. That is, Bailey et al. also do not disclose or suggest a microchannel electrophoresis chamber that includes a dried membrane, or a membrane that had been dried. Thus, no combination of the teachings of Groves et al. and Bailey et al. could render obvious the invention recited in claim 67, and therefore recited in claim 68. The rejection of claim 68, therefore, should be withdrawn.

The examiner previously combined the teachings of Groves et al. and Bailey et al. with those of Goodrich et al. in rejecting a previous version of claim 68. Goodrich et al. disclose a method of freeze-drying lipid membranes for storage and later use. However, Goodrich et al. require that additional agents be applied to the lipids for freeze-drying and storage. For example, a buffer that must include at least one membrane-permeant cryoprotectant is added in Example 1; and in Example 2, different

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 15 of 17

monosaccharides/disaccharides/polymers are added. Goodrich et al. do not disclose or suggest in any of the examples or anywhere else in the reference that a substrate-supported membrane could exist as lipids only in a dried-up state, to be swelled by only water or a buffer solution, as recited in claim 67 and therefore in claim 68. Goodrich et al. only disclose lipids that are freeze-dried with buffers and additional agents, and state that such additives must be added.

For at least the reasons stated above, it is submitted that no combination of the teachings of Groves et al., Bailey et al., and Goodrich et al. could render obvious the invention recited in claim 68.

The examiner rejected claim 68 as being unpatentable over Boxer et al., in view of Bailey et al.

Claim 68 depends from claim 67. Independent claim 67 recites a method of providing a microchannel electrophoresis chamber. According to the claimed method, at least one channel having a bottom surface including a substrate-supported membrane is provided. The substrate-supported membrane includes a substrate and a dried-up fluid lipid membrane. The dried-up fluid lipid membrane is composed of only dried-up lipids. The dried-up fluid lipid membrane is reconstituted by swelling lipids in the membrane by the addition of only one or more fluids selected from the group consisting of water and a buffer solution, that is, by the addition of only water, only a buffer solution, or only water and a buffer solution.

In contrast, Boxer et al. disclose lipid bilayer membranes that do not include a dried membrane, or a membrane that had been dried, as previously acknowledged by the

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 16 of 17

examiner. See, for example, the examiner's action dated September 19, 2005, on page 5. Bailey et al. do not overcome the noted deficiencies of the teachings of Boxer et al. That is, Bailey et al. also do not disclose or suggest a microchannel electrophoresis chamber that includes a dried membrane, or a membrane that had been dried. Thus, no combination of the teachings of Boxer et al. and Bailey et al. could render obvious the invention recited in claim 67, and therefore recited in claim 68. The rejection of claim 68, therefore, should be withdrawn.

The examiner previously combined the teachings of Boxer et al. and Bailey et al. with those of Goodrich et al. in rejecting a previous version of claim 68. Goodrich et al. disclose a method of freeze-drying lipid membranes for storage and later use. However, Goodrich et al. require that additional agents be applied to the lipids for freeze-drying and storage. For example, a buffer that must include at least one membrane-permeant cryoprotectant is added in Example 1; and in Example 2, different monosaccharides/disaccharides/polymers are added. Goodrich et al. do not disclose or suggest in any of the examples or anywhere else in the reference that a substrate-supported membrane could exist as lipids only in a dried-up state, to be swelled by only water or a buffer solution, as recited in claim 67. Goodrich et al. only disclose lipids that are freeze-dried with buffers and additional agents, and state that such additives must be added.

For at least the reasons stated above, it is submitted that no combination of the teachings of Boxer et al., Bailey et al., and Goodrich et al. could render obvious the invention recited in claim 68.

Application No. 10/049,245  
Amendment dated May 17, 2006  
Reply to Office action dated February 22, 2006

Page 17 of 17

Based on the foregoing, it is submitted that all rejections have been overcome. It is therefore requested that the Amendment be entered, the claims allowed, and the case passed to issue. If the examiner does not allow the rejected claims after entry of this Amendment, the examiner is encouraged to contact the undersigned by telephone to attempt to resolve any outstanding issues.

Respectfully submitted,

---

May 17, 2006

Date

TMC:hlp



---

Thomas M. Champagne  
Registration No. 36,478  
IP STRATEGIES  
12 ½ Wall Street  
Suite I  
Asheville, North Carolina 28801  
828.253.8600  
828.253.8620 fax